

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES SECTION**

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

LAKE CLAIBORNE

**WATERBODY EVALUATION &
RECOMMENDATIONS**

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED EVERY THREE YEARS

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WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational

Sportfish species are managed to provide a sustainable population while providing anglers the opportunity to catch or harvest numbers of fish adequate to maintain angler interest and efforts. Bass anglers are afforded the opportunity to catch an occasional memorable or trophy-size fish through the introduction of Florida largemouth bass.

Commercial

The physical characteristics of Lake Claiborne do not support significant numbers of large rough fish species that normally comprise a commercial fishery, therefore the commercial fishery is limited to catfish species including channel catfish (*Ictalurus punctatus*), blue catfish (*Ictalurus furcatus*) and flathead catfish (*Pylodictis olivaris*). The lake does not support large enough numbers of catfish to attract much interest from commercial fishermen. Catfish are managed primarily to provide an additional recreational opportunity.

Species of Special Concern

No threatened or endangered fish species are found in this waterbody.

EXISTING HARVEST REGULATIONS

Recreational

Statewide regulations for all fish species; the recreational fishing regulations may be viewed at the link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

Commercial

State regulations apply except that the use of gill nets, trammel nets and fish seines are prohibited in Lake Claiborne.

In 2004, Act 541 authorized the Louisiana Wildlife and Fisheries Commission to regulate, restrict or prohibit the recreational or commercial use of hoop nets, gill nets, trammel nets, strike nets, seines, wire nets, slat traps, and wire traps on Lake Claiborne (see RS 38:2874 in Appendix I). This legislation was passed in response to concerns over commercial activity on Lake Claiborne. No restrictive action has been imposed by the Commission to date. No gear restrictions have been enacted for Lake Claiborne since entanglement gear was prohibited in 1982.

The commercial fishing regulations may be viewed at the link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

Parish Regulations

There are no regulations by the parish or watershed district specific to fishing. Other parish regulations are summarized at the Claiborne Parish Watershed District's website which can be viewed at < <http://www.cpwater.org/> >.

SPECIES EVALUATION

Recreational

Lake Claiborne has been sampled with various types of gear over the years. Biomass (rotenone) sampling was the primary sampling method from 1970 through 1990 in an effort to estimate annual standing crop of all fish in the lake. Biomass sampling was discontinued in 2000. Electrofishing samples were initiated in 1990 to collect information specifically on largemouth bass and crappie populations. Largemouth bass and crappie are targeted as species indicative of the overall fish population health due to their high position in the food chain. Forage samples are conducted in conjunction with fall electrofishing samples. Standardized gill net sampling was conducted beginning in 1997 to sample larger-bodied fish (i.e., > 5 lbs.) and monitor the hybrid striped bass population and commercial species of fish (e.g., catfish, common carp).

Largemouth bass

Biomass estimates

Largemouth bass are targeted for evaluation since they are a species indicative of the overall fish population due to their high position in the food chain. Electrofishing is the best indicator of largemouth bass abundance and size distribution, with the exception of large fish (i.e., > 5 lbs.). Sampling with gill nets provides better assessment of large bass and other large-bodied fish species (e.g., bowfin or common carp). Biomass (rotenone) sampling was the primary method used to sample the fisheries population on Lake Claiborne up until 1990 when electrofishing sampling was initiated. Figure 1 below indicates the standing crop estimates of largemouth bass in pounds per acre from 1970 until 2000. There may be a slight increase in the standing crop of largemouth bass on Lake Claiborne during the period sampled. The yearly average standing crop was approximately 10 pounds per acre over the period sampled.

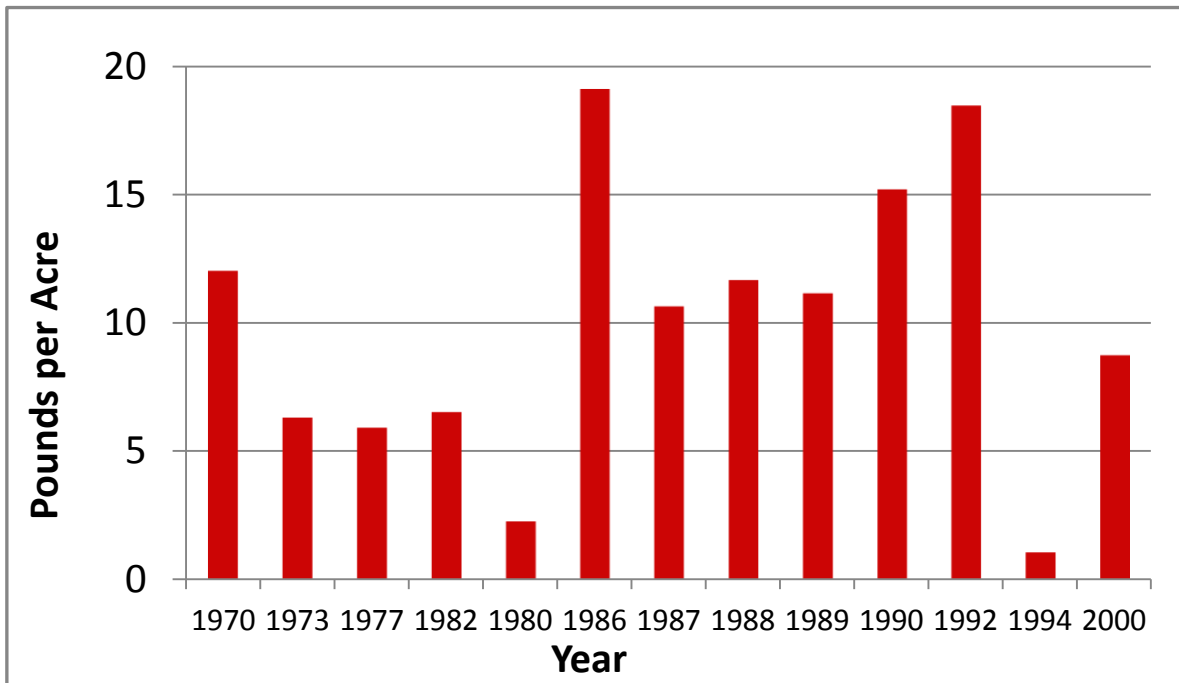


Figure 1. Annual standing crop estimates in pounds per acre of largemouth bass collected from biomass (rotenone) sampling results in Lake Claiborne, LA from 1970 to 2000.

Catch Per Unit Effort and Size Distribution

Electrofishing has been the primary sampling technique utilized on Lake Claiborne in recent years. Results from spring electrofishing samples for stock-size (i.e., total length ≥ 8 in.), quality-size (i.e., total length ≥ 12 in.), and preferred-size (i.e., total length ≥ 15 in.) largemouth bass from 1990 – 2010 are presented in Figure 2 below. The trend line from data collected during this time period indicates a slight increase in stock-size fish in Lake Claiborne over this time period.

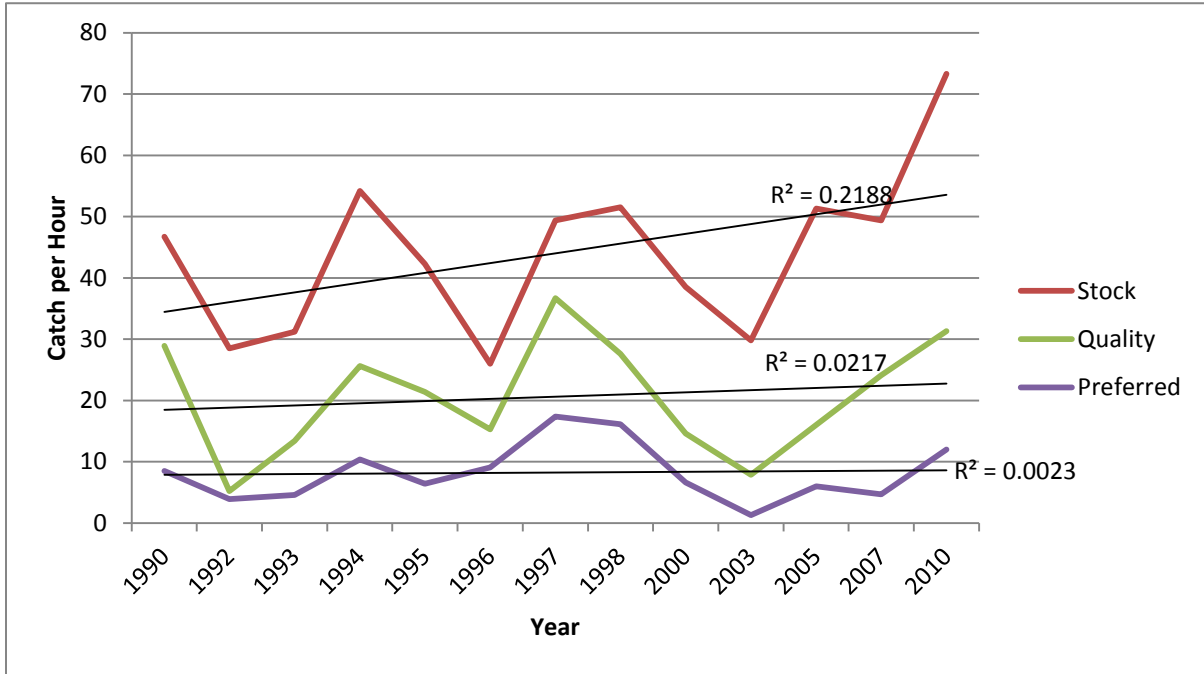


Figure 2. Spring electrofishing catch-per-unit-of-effort (CPUE) for stock-size (≥ 8), quality-size (≥ 12 "") and preferred-size (> 15 "") largemouth bass on Lake Claiborne, LA from 1990-2010.

The CPUE for stock-size, quality-size, and preferred-size largemouth bass from the fall electrofishing samples are shown in Figure 3 below. Results from fall samples indicate similar trends to the spring samples, an increase CPUE of stock-size largemouth bass but no significant change in CPUE of quality of preferred-size bass.

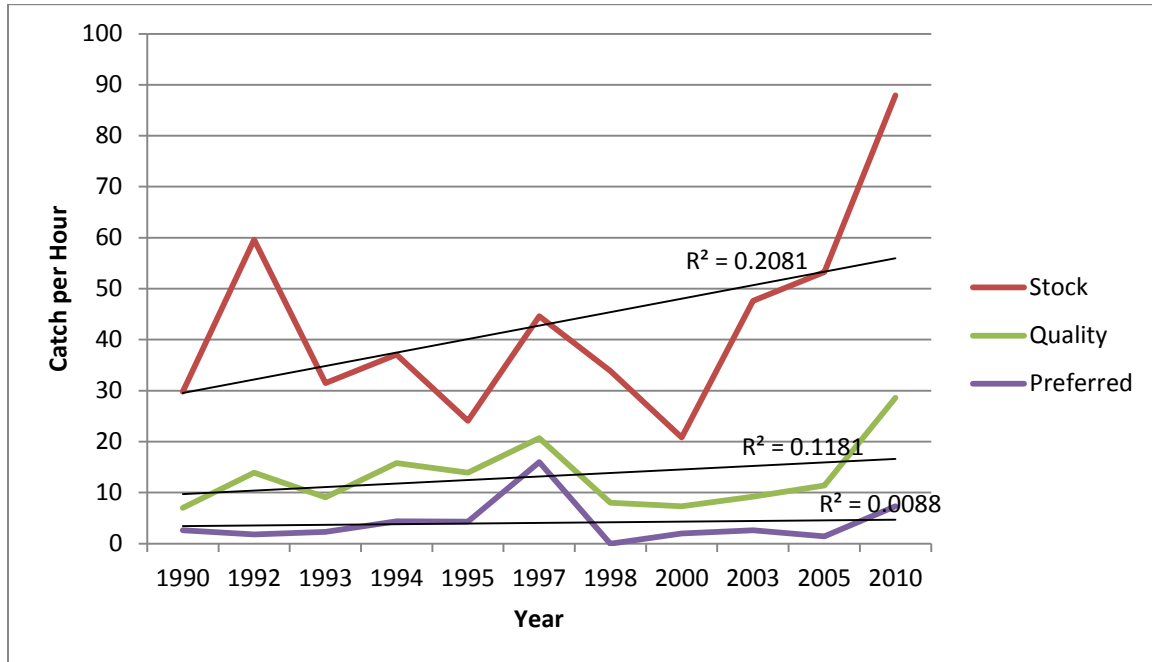


Figure 3. Catch-per-unit-of-effort (CPUE) for stock-size ($\geq 8''$), quality-size ($\geq 12''$) and preferred-size ($\geq 15''$) largemouth bass collected during fall electrofishing sampling on Lake Claiborne, LA from 1990-2010.

Proportional stock density (PSD) and relative stock density (RSD) are indices used to numerically describe size-distribution (length) data. Proportional stock density compares the number of fish of quality-size (greater than 12 inches for largemouth bass) to the number of bass of stock-size [greater than 8 inches in total length (TL)]. The PSD is expressed as a percentage. A fish population with a high PSD consists mainly of larger individuals, whereas a population with a low PSD consists mainly of smaller fish. Relative stock density compares the number of fish of a given size range to the number of bass of stock size. A common calculation used in fisheries management is for RSD-Preferred (RSD-P). This value compares the number of largemouth bass > 15 inches TL to the number of stock-size largemouth bass in the population. This is also commonly called RSD-15 values. Values for PSD and RSD – Preferred (> 15 inches in TL) from the spring electrofishing samples are shown in Figure 4 below. Ideal PSD and RSD-P values for largemouth bass range from 40- 70 and 10-40, respectively. The spring electrofishing samples indicate the values fell within the desired ranges for most years. There appears to have been an increase in the proportion of both quality and preferred size ranges in the mid-1990's for an unknown reason. However, goodness-of-fit analysis indicates the change was not significant (R -squared=0.11).

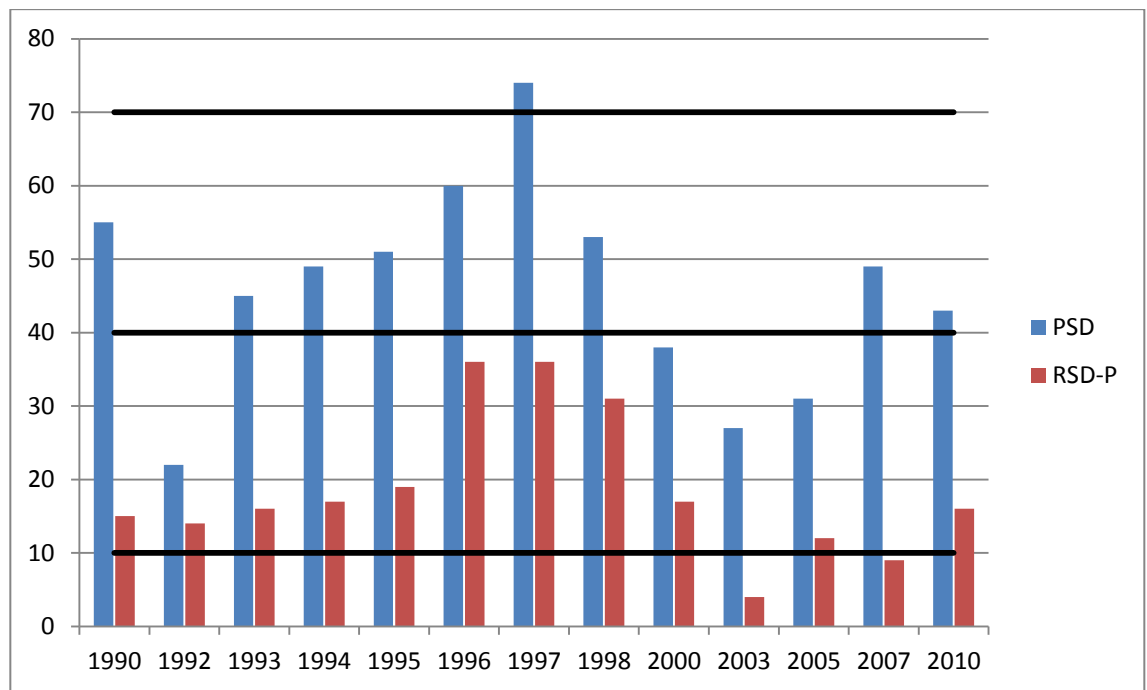


Figure 4. Size-structure indices for largemouth bass on Lake Claiborne, LA, from 1990 to 2010 for spring electrofishing samples. PSD desired range – 40-70 and RSD desired range 10-40.

The largemouth bass size-structure indices for fish collected during the fall electrofishing samples indicate results similar to those found in the spring samples with variation from year to year and a peak in 1995; no significant change was observed in the proportion of quality- size fish and preferred-size fish during this time period ($R^2=0.304$). Unlike the spring samples, the index values fell below the desired range for both statistics most years. This information is shown in Figure 5 below.

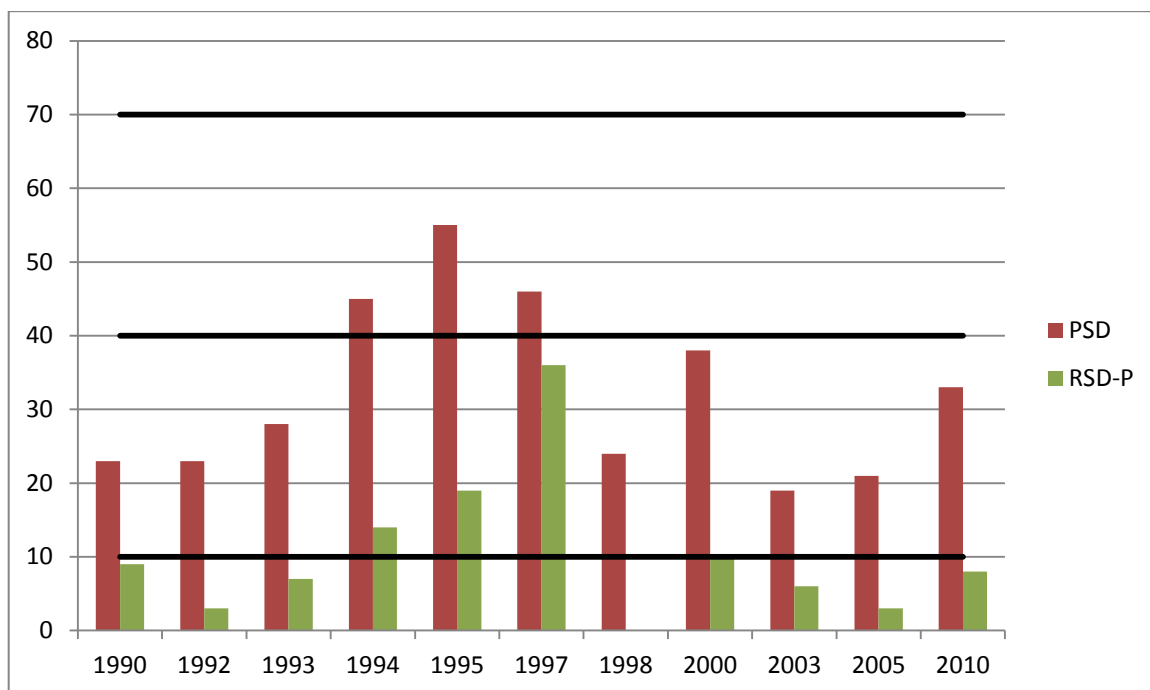


Figure 5. Size-structure indices for largemouth bass collected during fall electrofishing samples on Lake Claiborne, LA, from 1990 to 2010. PSD desired range – 40-70 and RSD desired range 10-40.

Standardized gill net sampling conducted on Lake Claiborne provides insight into the population of the larger size largemouth bass, hybrid striped bass and crappie that is not effectively sampled with standardized electrofishing techniques. Figure 6 below indicates the mean number per net night and size distribution of largemouth bass captured in gill nets from 1997 – 2010. Very few memorable-size (≥ 20 -inches) largemouth bass were collected from Lake Claiborne.

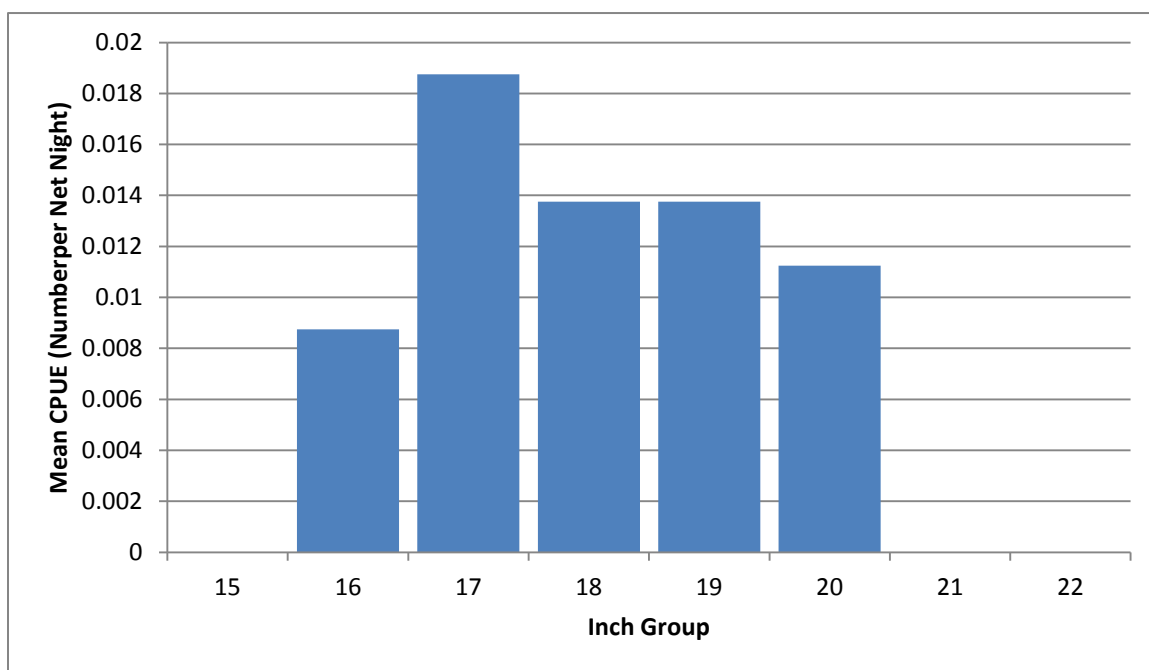


Figure 6. The mean CPUE (number) per net night (100' net) of largemouth bass (*Micropterus salmoides*) collected during standardized gill net sampling on Lake Claiborne, LA, from 1997 - 2010.

Largemouth bass genetics

Florida largemouth bass stockings on Lake Claiborne were initiated in 1999 in an effort to offer anglers a chance to catch a fish of greater size. To date, 885,842 Florida bass fingerlings have been stocked in Lake Claiborne. Genetic testing, conducted in 2010 indicates only a 12% Florida bass genetic introgression. Anecdotal information indicates that benefits of the Florida bass stockings have not been substantial. Relatively few large bass have been reported by Lake Claiborne anglers since the stocking efforts began.

The largemouth bass size distribution by genome for the fish collected during the fall 2010 sample is shown in Figure 7 below. The larger fish collected were northern and the majority of the fish (66%) having Florida influence were less than 8" in length, indicating a successful stocking program for 2009-2010.

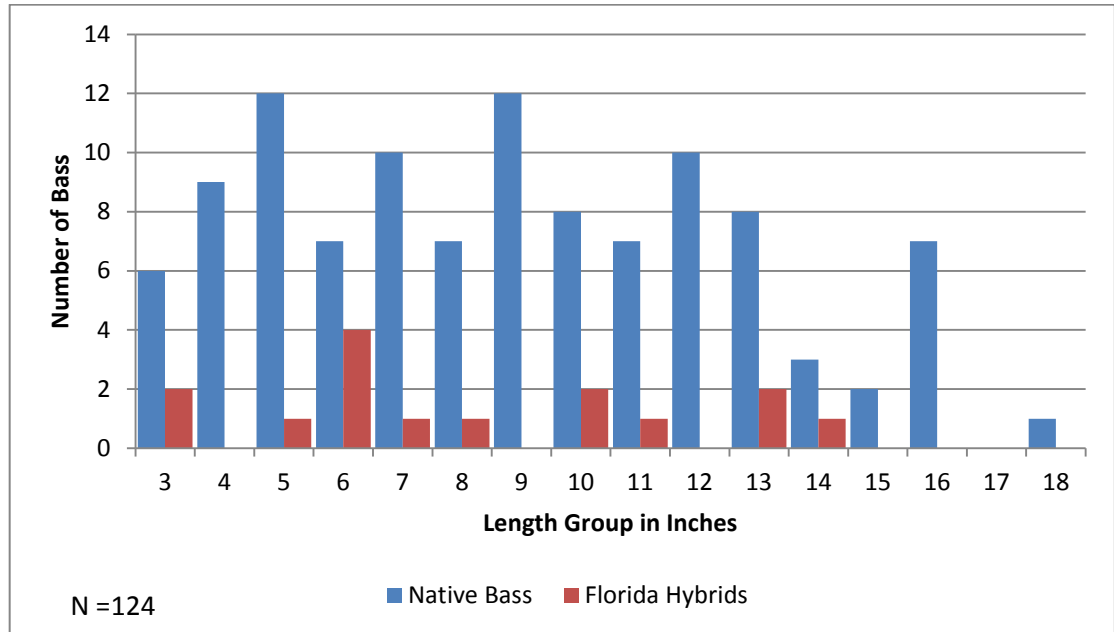


Figure 7. Largemouth bass size distribution by genome for fish collected by electrofishing in the fall of 2010 from Lake Claiborne, LA.

The relationship of length to weight for largemouth bass collected during the fall 2010 electrofishing sample is shown in the chart in Figure 8 below. The high R^2 value indicates a good statistical “fit” of the length-weight variables within this population during the fall season.

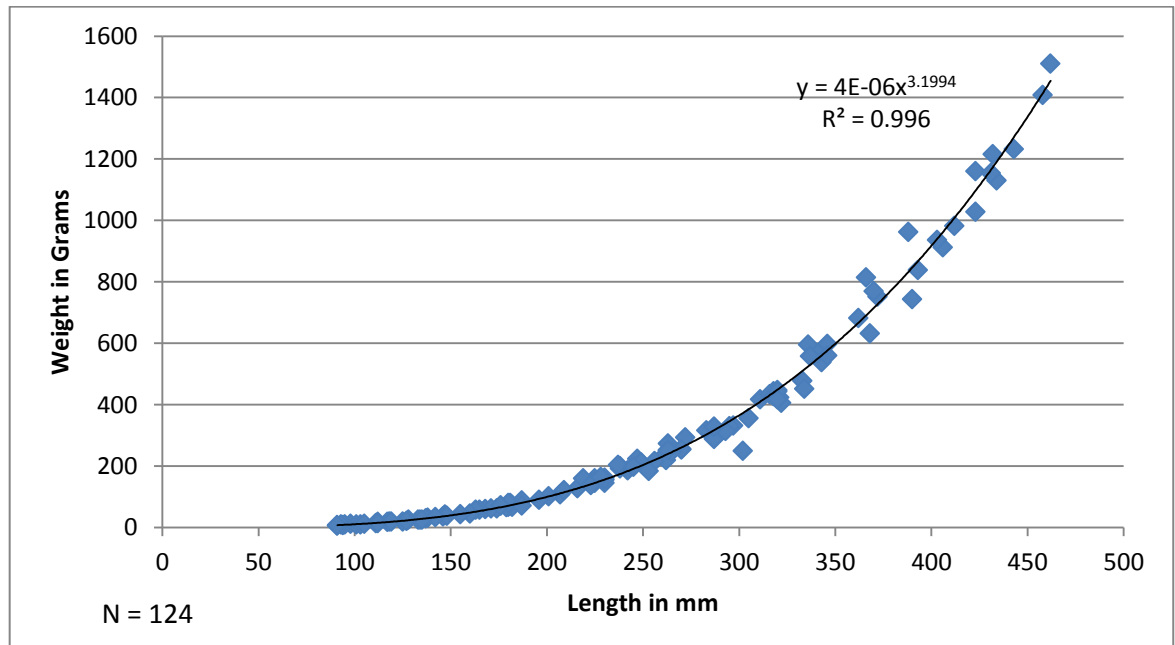


Figure 8. The observed and predicted relationship of length to weight for largemouth bass collected during the fall 2010 electrofishing sample from Lake Claiborne, LA.

Forage

Forage availability is measured directly through fall forage electrofishing results and indirectly through measurement of largemouth bass body condition or relative weight (Wr). Relative weight is the ratio of a fish's weight to the weight of a "standard" fish of the same length. The Wr index is calculated by dividing the weight of a fish by the standard weight for its length, and multiplying the quotient by 100. Largemouth bass Wr below 80 indicate a potential problem with forage availability.

Figure 9 illustrates the relative weight (Wr) for stock-size and larger fish collected during fall electrofishing samples from 1990 – 2010. Relative weights were relatively low in the early 1990's but have since remained above 90, indicating available forage for these size groups of largemouth bass during this period.

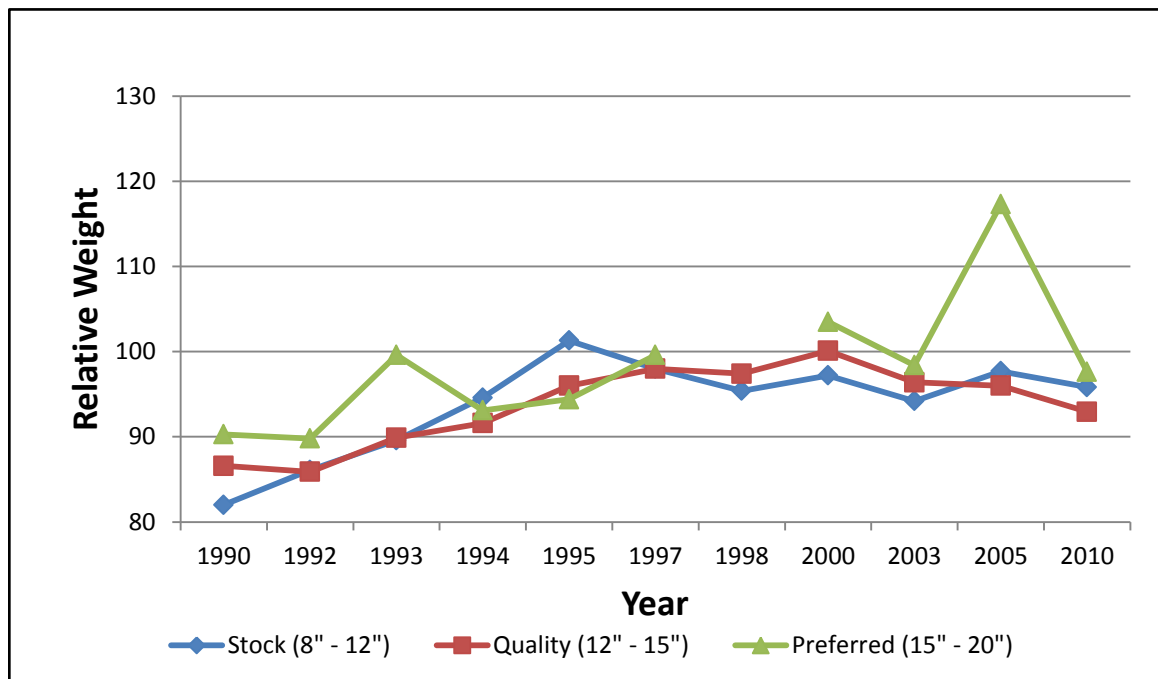


Figure 9. Relative weights of largemouth bass by size group collected during fall electrofishing from Lake Claiborne, LA, from 1990 to 2010.

Forage samples were collected in conjunction with fall electrofishing samples from 1990 – 2010. Only fishes ≤ 5 inches TL are considered as forage for the purpose of evaluating the available forage in the reservoir. Sunfish (*Lepomis* spp.), threadfin shad (*Dorosoma petenense*) and brook silversides (*Labidesthes sicculus*) comprised the majority of the species available as forage. The number per hour of black bass, sunfish and forage species are illustrated in Figure 10 below.

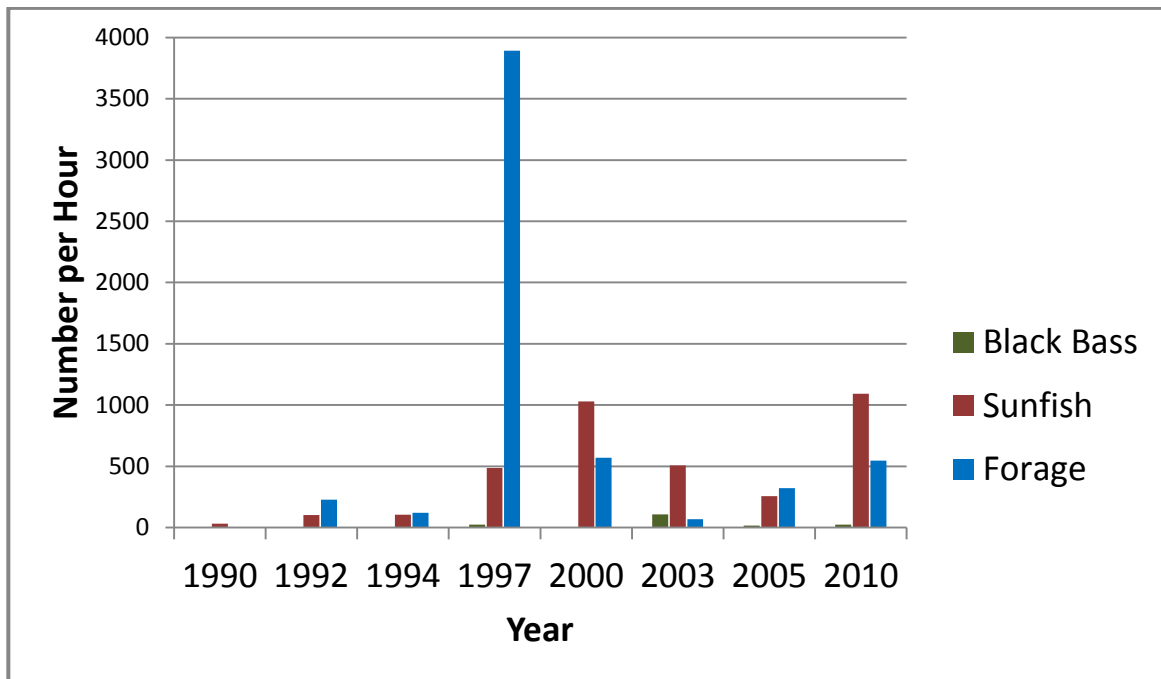


Figure 10. The CPUE in number per hour of fishes ≤ 5 inches TL from forage samples captured in Lake Claiborne, LA from 1990 to 2010.

The pounds per hour of species collected during the forage sample are shown in the graph in Figure 11 below. Sunfish (*Lepomis* spp.) comprised the largest component by weight of the available forage in the lake for all years except 1997.

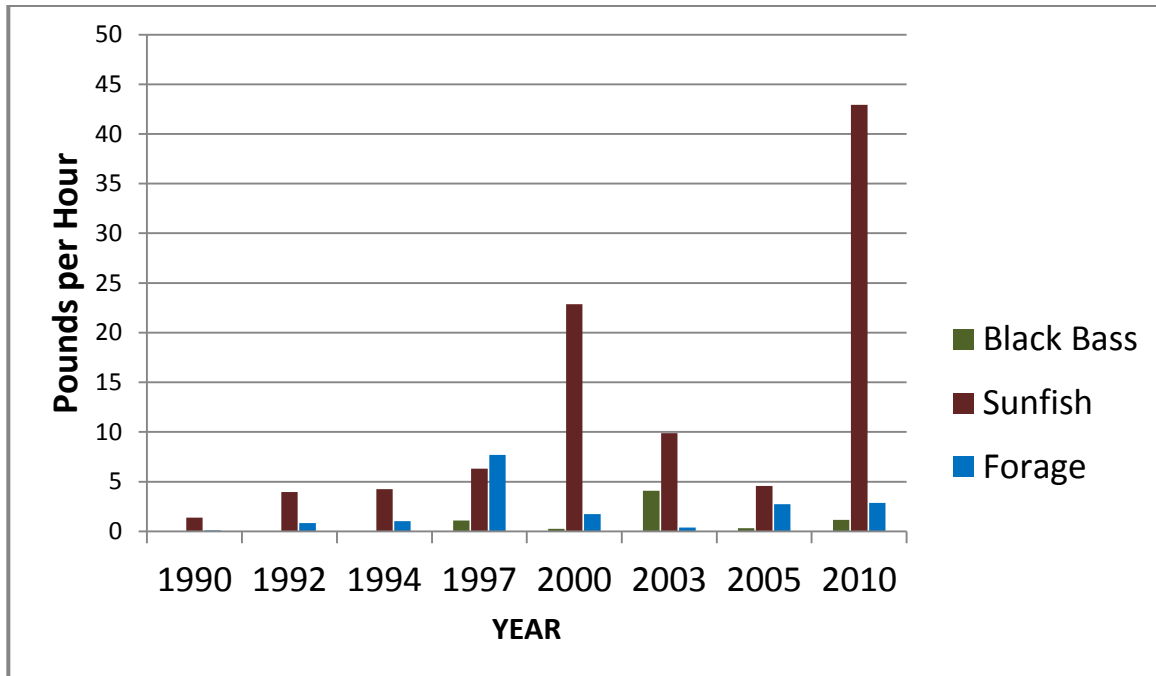


Figure 11. The CPUE in pounds per hour of fishes ≤ 5 inches TL from forage samples captured in Lake Claiborne, LA from 1990 to 2010.

Results shown in Figures 10 and 11 appear to support the increases in largemouth bass W_r seen in fall electrofishing samples. There has been a marked increase in available forage since the mid-1990's that corresponds with a reduction in CPUE of shad > 6 inches total length. This shift in the forage composition resulted in more robust largemouth bass than in previous years. The shift in forage composition may be attributed to an increased hybrid striped bass population. Between 1993 and 1995, 1.27 million hybrid striped bass fingerlings were stocked into Lake Claiborne.

Crappie

Crappie collected during biomass (rotenone) sampling conducted from 1970 to 2000 consisted of both black crappie (*Pomoxis nigromaculatus*) and white crappie (*Pomoxis annularis*), with the black crappie being more abundant. The sampling revealed no significant change in the crappie population which averaged a relatively low 2.2 pounds per acre per year (Figure 12).

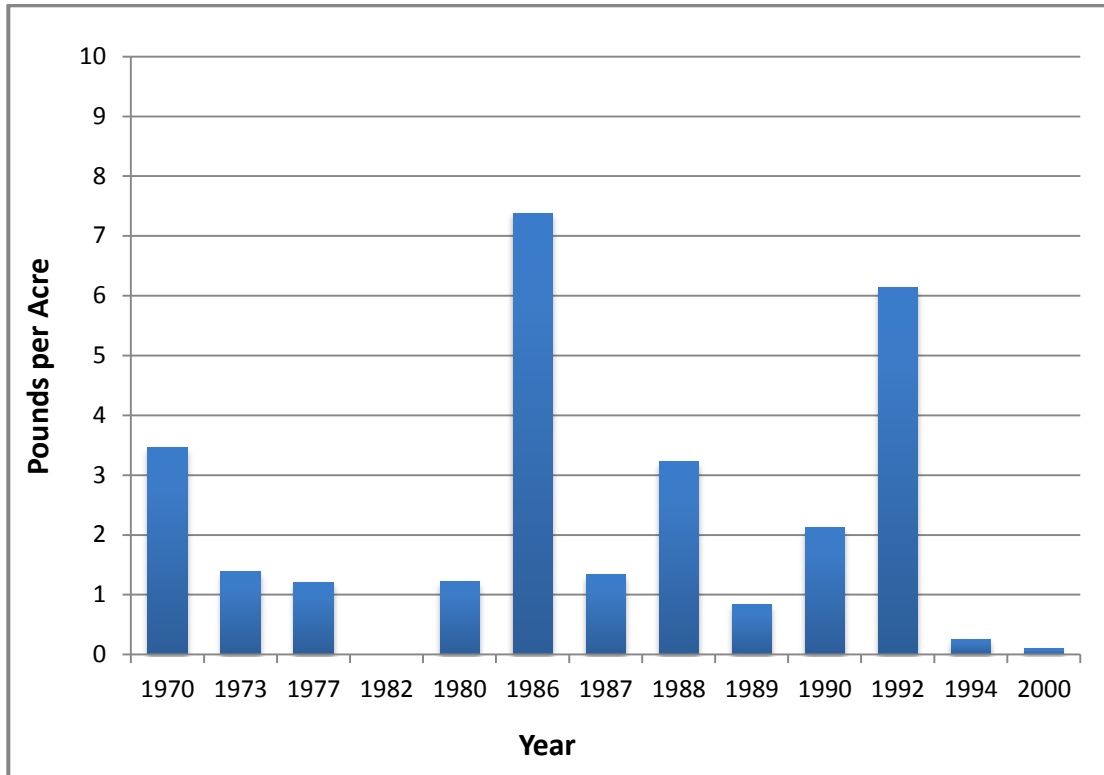


Figure 12. The estimated biomass (rotenone sampling) in pounds per acre of crappie collected from Lake Claiborne, LA, from 1970 to 2000.

Few crappie were collected during spring electrofishing samples from 1990 – 2010 as depicted in Figure 13. Overall numbers were low and no crappies were collected in several samples.

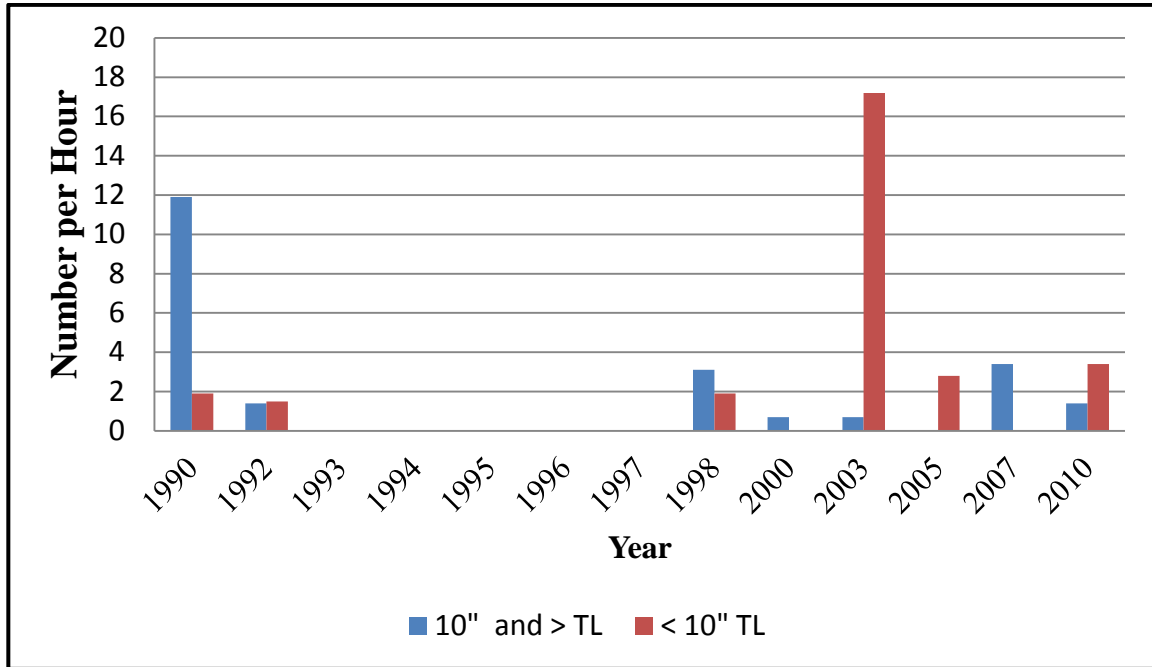


Figure 13. The CPUE of crappie captured during springtime electrofishing samples from Lake Claiborne, LA from 1990 to 2010. TL = total length.

Results from gill net sampling reveal a significant population of larger size crappie in Lake Claiborne as indicated in Figure 14 below.

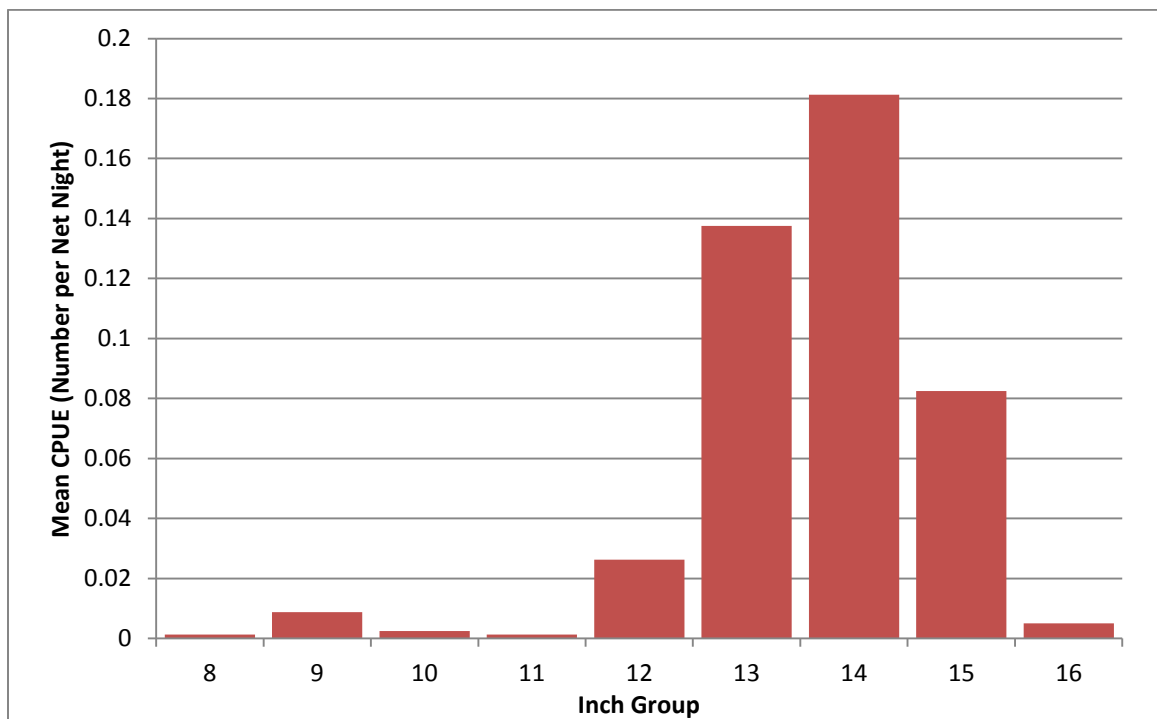


Figure 14. The mean CPUE (number) per net night (per 100' net) of crappie collected during standardized gill net sampling on Lake Claiborne, LA, from 1997 - 2010.

In recent years, LDWF has used lead net gear to collect better information on crappie populations. Although lead nets have not yet been fished on Lake Claiborne, plans are to assess the crappie population using lead nets beginning in 2016. Anecdotal information from angler catches suggests that Lake Claiborne has a more abundant crappie population than existing data would suggest.

Hybrid Striped Bass

Hybrid striped bass have been stocked in Lake Claiborne for a number of years as an additional sport fish, to provide a biological control measure for an excess gizzard shad population and to correct a stunted bream population. These fish are not readily sampled with other gear types but comprise a significant portion of the recreational fish collected during gill net sampling as indicated in Figure 15 below. Stockings of hybrid striped bass have been more consistent in recent years and appear to be maintaining a stable population.

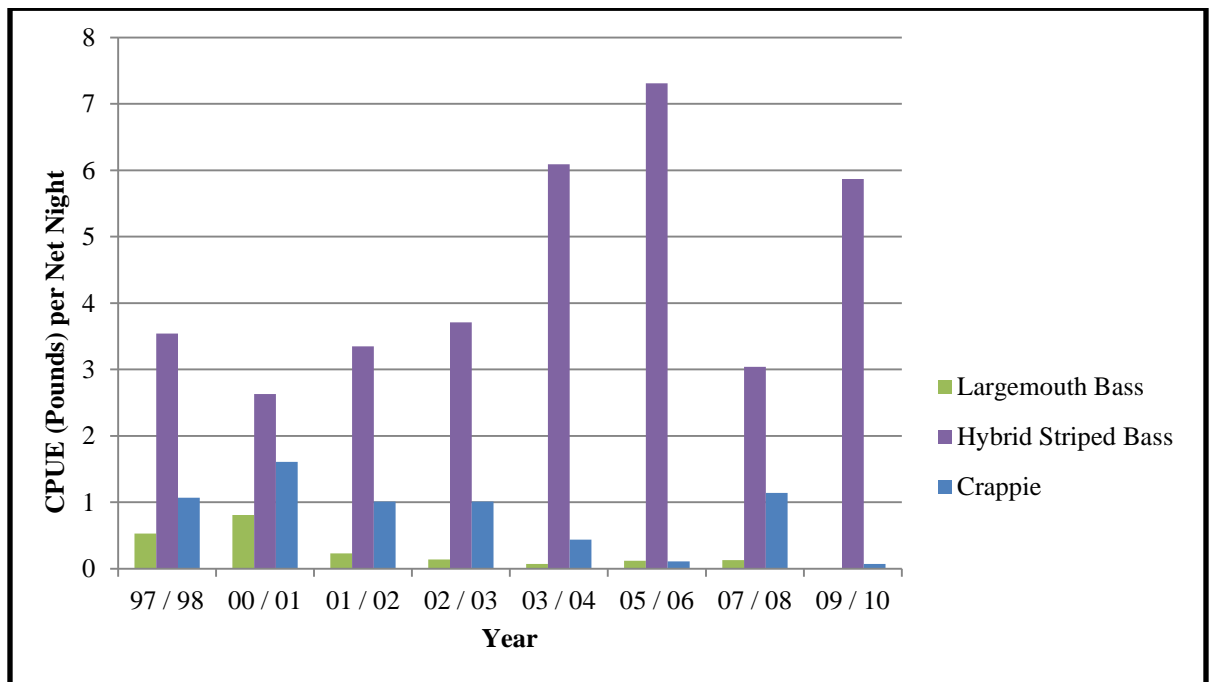


Figure 15. The catch per unit effort (CPUE) in pounds per net night (100' net) of largemouth bass, hybrid striped bass, and crappie in Lake Claiborne, LA, during standardized gill net sampling from 1997 – 2010.

The hybrid striped bass affords anglers a larger size sport fish as indicated by the size distribution of the fish captured during standardized gill net sampling as depicted in Figure 16.

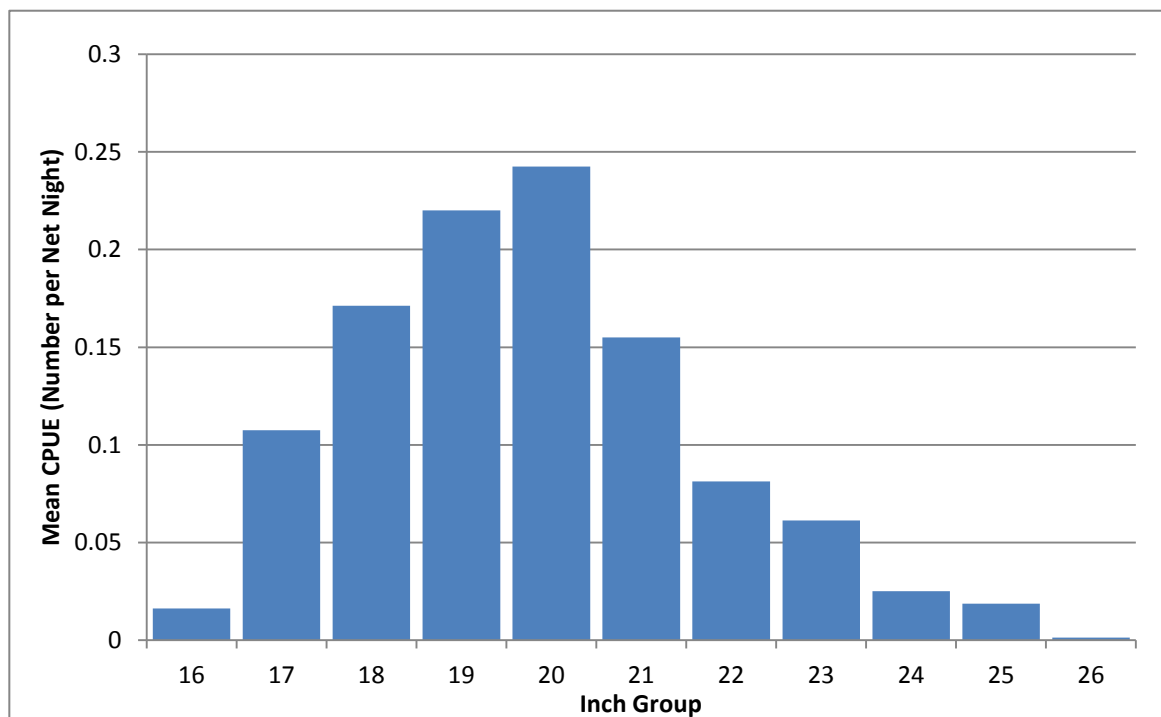


Figure 16. The Mean CPUE (number of fish) per net night (100' net) per size group of hybrid striped bass collected during standardized gill net sampling on Lake Claiborne, LA, from 1997 - 2010.

Commercial

LDWF sampling results indicate that, despite extensive introductions, channel catfish have not established a self-sustaining population in Lake Claiborne.

Biomass sampling-

Historical biomass sampling on Lake Claiborne indicates that while several commercial species such as channel catfish (*Ictalurus punctatus*), spotted gar (*Lepisosteus oculatus*), carp (*Cyprinus carpio*) and flathead catfish (*Pylodictis olivaris*) were present in the lake, they were not abundant (Figure 17).

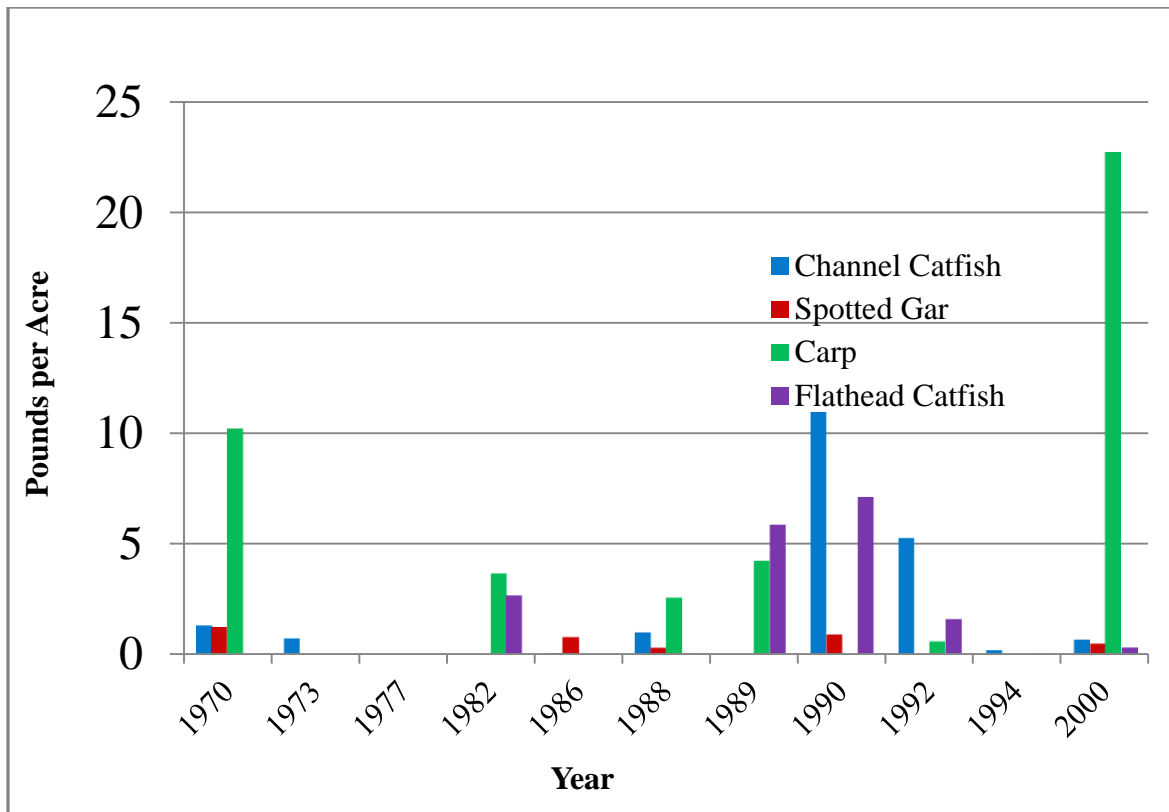


Figure 17. The CPUE in pounds per acre of commercial fish collected during standardized biomass (rotenone) sampling in Lake Claiborne, LA, from 1970 to 2000. No commercial species were found to be particularly abundant during these samples.

Gill nets-

Standardized sampling with gill nets was conducted on the lake from 1997 – 2010. The primary commercial species collected were catfish as indicated in Figure 18 below. The number of commercial fish present in the lake is relatively low and there is little commercial activity on the lake.

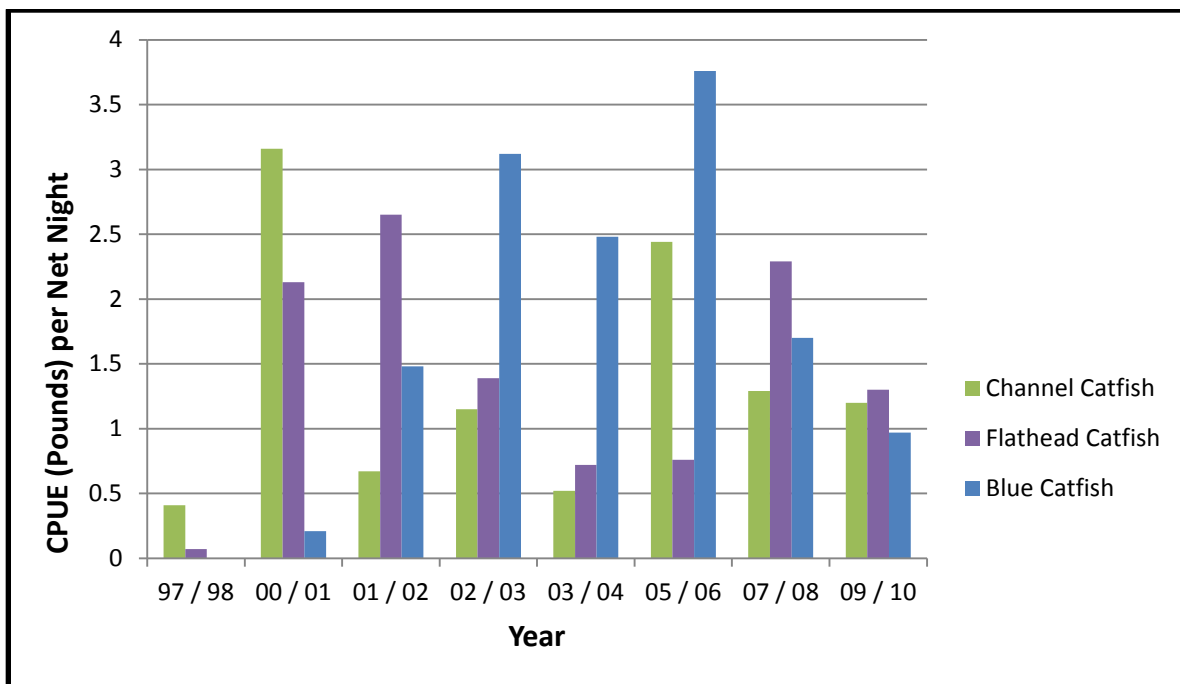


Figure 18. The catch per unit effort (CPUE) in pounds per net night (100' net) per year of catfish in Lake Claiborne, LA, during standardized gill net sampling from 1997 – 2010.

HABITAT EVALUATION

Aquatic Vegetation

Lake Claiborne has had very little problems with aquatic vegetation over the years. The lake sustains healthy levels of native submerged vegetation. Occasional complaints are received from shoreline property owners, who reside in the backs of coves or other shallow areas, but in general no plant problem has threatened the overall health of and access to the lake. However, in 2007 giant salvinia (*Salvinia molesta*) was discovered in the lake.

Giant salvinia has remained in check on Lake Claiborne since it was first introduced in 2007. Most of the infestations are on the upper end of the lake near the Hwy. 2 boat ramp. It is unlikely that giant salvinia will threaten the entire lake as there are no large sheltered areas to serve as nurseries, and most of the lake is open and exposed to wind and wave action. Giant salvinia reached a maximum coverage of 80 acres in late 2013. Severe winters in 2010, 2011, 2014, and 2015 have greatly reduced the plants each year.

There is a drainage canal and adjoining roadside ditches on the north side of Hwy. 2 that

continually harbor giant salvinia. This area has annually been treated with herbicides. In 2014, the CPWD partnered with Dr. Li of Stephen F. Austin University to sponsor an experimental treatment at this site. Dr. Li began treating the area in August 2014 with his experimental salvinia endocide. Following multiple treatments and physical removal of the plants to conduct the treatment, live viable salvinia plants remained in approximately 25% of the ditch by December. Freeze events in February and March 2015 significantly reduced the remaining salvinia in the ditch.

Historic aquatic plant control efforts have been primarily foliar herbicide applications for emergent vegetation at the request of shoreline property owners on the upper end of the lake or in the backs of shallow coves.

Recent aquatic plant control measures have primarily targeted giant salvinia with foliar herbicide applications. Limited applications have continued for emergent vegetation along the inhabited shoreline, or in areas that harbor salvinia. In 2015, LDWF crews treated 1.5 acres of giant salvinia along with 8.5 of emergent vegetation (lotus and primrose). Giant salvinia was treated with Tribune (0.75 gal/acre) and the emergent vegetation was treated with Platoon (0.5 gal/acre).

Substrate

The substrate of Lake Claiborne is composed of moderately to well-drained sandy loam interspersed with gravelly areas and areas with iron ore in the littoral zone of the lake. Organic content is generally low throughout the lake due to low levels of aquatic vegetation in the lake and the frequent drawdowns which allow the organic material in the littoral zone to dry and decompose. The majority of the littoral zone of Lake Claiborne consists of suitable fish spawning substrate for nest building fish.

Complex Cover

Complex cover in Lake Claiborne consists primarily of stumps, which can be found in approximately 50% of the lake. The majority of the shoreline of the lake is lined with piers, boathouses, and scattered fallen timber. Submerged aquatic vegetation in Lake Claiborne is primarily limited to the upper end of the lake and the back ends of coves.

CONDITION IMBALANCE / PROBLEM

The only potential problem on Lake Claiborne at this time is the presence of giant salvinia on the upper end of the lake, in the area of the Hwy 2 boat ramp.

Other issues are occasional complaints from shoreline property owners about nuisance aquatic vegetation near their property which is usually an aesthetic problem, but occasionally involves access issues.

The hybrid striped bass fishery is very popular with some anglers and equally unpopular with others. The fish have helped correct an overabundance of gizzard shad and helped control a stunted bream population in the lake in addition to providing additional recreational opportunities for anglers.

Channel catfish and blue catfish grow well in the lake, but conditions are not favorable for

reproduction. Supplemental stockings have been conducted by LDWF and the Lake Commission to maintain the population of blue catfish and channel catfish in Lake Claiborne.

Lake Claiborne has undergone thirteen drawdowns since it was impounded in 1966. All drawdowns of record were conducted at the request of the CPWDC for shoreline maintenance purposes. Often these drawdowns were controversial due to short duration since the last drawdown or short notice provided to shoreline residents who wanted to make improvements to their property.

CORRECTIVE ACTION NEEDED

Control infestation of giant salvinia on the lake.

Control nuisance aquatic vegetation in shallow areas where access is impeded or in locations that are serving as a nursery for giant salvinia.

In order to reduce any possible detrimental effects to the fishery and to insure that shoreline property owners have ample time to plan for shoreline repairs or improvements, the Claiborne Parish Watershed District Commission has adopted a policy of requesting a drawdown every 6 years.

RECOMMENDATIONS

1. Make periodic surveys for giant salvinia and salvinia nursery areas on Lake Claiborne. Foliar herbicide applications will be made by LDWF for control of giant salvinia (*Salvinia molesta*), water hyacinth (*Eichhornia crassipes*), alligator weed (*Alternanthera philoxeroides*), and other noxious emergent and floating vegetation on an as needed basis. Make foliar herbicide applications to giant salvinia in the canal area north of Hwy 2 using pirogues and backpack sprayers. Spray applications will be made with a mixture of glyphosate (0.75 gal/acre) and diquat (0.25 gal/acre) with Aqua King Plus (0.25 gal/acre) and Air Cover (8 oz./acre) surfactants from April 1 to October 31. From November through March, diquat will be used at a rate of 0.75 gal/acre in addition to 1 qt. per acre of non-ionic surfactant.
2. Continue scheduled standardized sampling of fish populations and aquatic vegetation to determine status over time. Special attention should be focused on long term results of Florida bass stockings and channel catfish stockings.
3. Stock hybrid striped bass fingerlings annually at the rate of 10 per surface acre to provide recreational fishing opportunities.
4. Continue drawdowns for shoreline maintenance on a six year rotation as per the Claiborne Parish Watershed District Commission adopted policy.